

REMARKS

Applicant has carefully reviewed the Application in light of the Office Action mailed May 22, 2003. At the time of the Office Action, Claims 1-21 were pending in the Application. Applicant amends Claims 13, 15, and 16. The amendments to the claims are not the result of any prior art reference and, thus, do not narrow the scope of any of the claims. Furthermore, the amendments are not related to patentability issues and only further clarify subject matter already present. All of Applicant's amendments are without prejudice or disclaimer. Applicant respectfully requests reconsideration of the pending claims and favorable action in this case.

Priority

The Examiner noted that Applicant has not filed a certified copy of the 99112552.7 Application filed in Europe on July 1, 1999, as is required by 35 U.S.C. 119(b). Applicant hereby submits an uncertified copy of the Application in order to address the Examiner's concern. Applicant also hereby submits an uncertified copy of the 01-11594.8 application filed in Europe on May 31, 2000, which was cross-referenced by Applicant (as evidenced by an amendment to the specification).

Information Disclosure Statement (IDS)

Applicant submits an IDS with this Response for the Examiner's review and consideration. Applicant respectfully requests that the Examiner formally indicate that the references were considered in the prosecution of the Application.

Specification

The Examiner made numerous objections to the specification relating to a number of informalities. Applicant apologizes for these clerical mistakes and has amended the specification in order to address the Examiner's concern. No new matter has been entered as a result of these amendments, as they only correct minor mistakes, typographical errors, and other minor inaccuracies or discrepancies.

Claim Objections

The Examiner made numerous objections to the Claims: specifically identifying a number of typographical errors. Applicant again apologizes for these drafting imperfections.

Applicant has made various corrections in order to address the Examiner's concern and, thereby, to overcome the Examiner's objections.

Section 112 Rejections

The Examiner rejects Claim 14 under 35 U.S.C. §112, first paragraph, because the specification, (purportedly) while being enabling for "a first receiving transponder optically coupled to the *second* optical carrier," does not reasonably provide enablement for "a first receiving transponder optically coupled to the *first* optical carrier" (lines 7-8). The Examiner cites other numerous similar rejections associated with Claim 14. Applicant presumes this issue to be a minor oversight by the Examiner. Applicant respectfully directs the Examiner's attention to FIGURES 2 and 3 and the corresponding description: part of which is provided at page 16. (e.g. "... Network 1 includes a first and a second optical fiber ring 2, 3 defining respective optical carriers that have opposite transmission directions.")

The Examiner also rejects Claim 15 under 35 U.S.C. §112, first paragraph, because the specification, (purportedly) while being enabling for connecting "the first receiving transponder to the third transmitting transponder *or* to the other receiver," the specification does not reasonably provide enablement for connecting "the first receiving to the third transmitting transponder *and* to the other receiver" (lines 1-12). Again, Applicant presumes this issue to be a reflection of a minor oversight by the Examiner. Applicant respectfully directs the Examiner's attention to FIGURE 3 and the corresponding description: part of which is provided at page 19. (e.g. "The receiving/transmitting module 6 contains the following components: transmitters Tx₁, Tx₂; receivers Rx₁, Rx₂; transmitting transponders TXT₁(λ_x), TxT₁(λ_y), TxT₂(λ_x), TxT₂(λ_y); receiving transponders RxT₁(λ_x), RxT₁(λ_y), RxT₂(λ_x), RxT₂(λ_y); a switch unit 15; and a central processing unit (CPU) 16.") Accordingly, Applicant has addressed and traversed this rejection; notice to this effect is respectfully requested from the Examiner.

Section 102 Rejections

The Examiner rejects Claims 1-3, 6-7, and 12 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,647,035 issued to Cadeddu et al. (hereinafter "*Cadeddu*"). Applicant respectfully traverses this rejection for the following reasons.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987); MPEP § 2131. In addition, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claims" and "[t]he elements must be arranged as required by the claim." *Richardson v. Suzuki Motor Co.*, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989); *In re Bond*, 15 USPQ 2d 1566 (Fed. Cir. 1990); MPEP § 2131 (*emphasis added*). In regard to inherency of a reference, "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." MPEP § 2112 (citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ 2d 1955, 1957 (Fed. Cir. 1993) (*emphasis original*)). Thus, in relying upon the theory of inherency, an Examiner must provide a basis in fact and/or technical reasoning to support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. MPEP § 2112 (citing *Ex Parte Levy*, 17 USPQ 2d 1461, 1464 (Bd. Pat. at App. and Inter. 1990) (*emphasis original*)).

Independent Claims 1 and 13 recite, in general, a plurality of nodes connected along the first optical carrier and the second optical carrier to form bidirectional links, the plurality of nodes communicating in pairs, one of the pairs defining a working link associated with a portion of the first optical carrier and a portion of the second optical carrier and being configured to exchange optical signals using a first wavelength on the first optical carrier and a second wavelength that is different from the first wavelength on the second optical carrier during a normal condition, the one pair of nodes being configured to exchange optical signals using the first wavelength on the second optical carrier and the second wavelength on the first optical carrier during a failure condition. Independent Claim 6 recites, in general, a plurality of nodes connected along the first optical carrier and the second optical carrier and configured to communicate in pairs to define bidirectional links, the method comprising exchanging optical signals between one of the pairs of nodes over one of the bidirectional links by using a first wavelength on the first optical carrier and a second wavelength on the second optical carrier during normal operation, detecting a failed link among the bidirectional links, and reconfiguring the nodes in the one pair to invoke a protection scheme that uses the first wavelength on the second optical carrier and the second wavelength on the first optical carrier to avoid the failed link.

In contrast to these teachings, *Cadeddu* provides a ring network communication structure on an optical carrier and a reconfigurable node for said structure. In said structure, a plurality of nodes are interconnected by means of connections that include a first and a second optical carrier such as an optical fiber. Transmission between two nodes occurs on the ring according to a wavelength-division multiplexing (WDM) scheme, by utilizing a first wavelength for communication in one direction on the first carrier and a second wavelength for communication in the opposite direction on the second carrier. The second wavelength on the first carrier and the first wavelength on the second carrier are reserved for protection (protection channels) and are "shared" among all the nodes. Under regular operation conditions of the network, the signals conveyed by the two fibers are detected, processed as required in units of a higher hierarchical level, converted again into optical signals, and re-transmitted toward the following node. In the presence of a failure on one of the connections, the nodes adjacent to the failed connection reconfigure themselves to ensure the continuation of communication on the alternative path provided by the ring: utilizing the first wavelength on the second carrier and the second wavelength on the first carrier. The embodiment described, referring to just two wavelengths λ_1, λ_2 , can be generalized to any number of wavelengths with a corresponding expansion of the described connection (switching matrices of the nxn type may be used).

In the ring network of *Cadeddu* where multi-wavelength signals have to be managed, since signal re-routing is localized at the nodes adjacent to the failure, the protection operations have to be performed on the entire set of wavelengths of the multiplex section and the reconfigured nodes must re-route all the working channels that were previously sent on the damaged ring segment to their respective protection channels running onto the complementary ring arc. This technique is then identifiable as an "Optical Multiplex Section Shared Protection" technique. Accordingly, each node in the network must be equipped with the optical switching tools for the complete set of wavelengths in the ring, and a switch matrix is then needed with a complexity which increases considerably when increasing the number of channels (e.g., if each channel carries 2.5 Gb/s and the system is adapted to transmit 16 channels, each matrix must be able to switch 16×2.5 Gb/s). The number of optical switching blocks that are required to protect N to $MN/2$ number of links (where N is the number of wavelengths and M the number of nodes) is always MN .

However, nowhere in *Cadeddu* is there any disclosure of a plurality of nodes connected along the first optical carrier and the second optical carrier to form bidirectional links, the

plurality of nodes communicating in pairs, one of the pairs defining a working link associated with a portion of the first optical carrier and a portion of the second optical carrier and being configured to exchange optical signals using a first wavelength on the first optical carrier and a second wavelength that is different from the first wavelength on the second optical carrier during a normal condition, the one pair of nodes being configured to exchange optical signals using the first wavelength on the second optical carrier and the second wavelength on the first optical carrier during a failure condition. This is because the complexity of the node-switching structure of the claimed architecture depends only on the number of links managed by the nodes and does not depend on the number of wavelengths in the network. Moreover, switching operations are performed external to the network, as provided by the claimed subject matter. In particular, the present invention allows switching of the single channel to be performed between the receiving and the transmitting transponders and, therefore, the multiplexed optical flux conditions at the input of the node amplifier are substantially unchanged. Thus, the subject matter of *Cadeddu* is clearly distinguishable from the pending claims.

For at least these reasons, Claims 1, 6, and 13 are patentable over *Cadeddu*. Claims 2-5, 7-12, and 14-21 depend from Claims 1, 6, and 13 respectively and, thus, are also allowable for similar reasons. Notice to this effect is respectfully requested in the form of a full allowance of these claims.

Section 103 Rejections

The Examiner rejects Claims 3-4 and 12 under 35 U.S.C. §103(a) as being unpatentable over European Patent Application EP 920153 A2 (hereinafter "*Shiragaki*") in view of *Cadeddu*. The Examiner also rejects Claims 5 and 13-21 under 35 U.S.C. §103(a) as being unpatentable over *Shiragaki et al.* in view of *Cadeddu* as applied to Claim 4 and, further, in view of Karasan et al.: an article entitled "Optical restoration at the wavelength-multiplex-section level in WDM mesh networks" (hereinafter "*Karasan*").

Applicant initially identifies the inappropriateness of *Cadeddu*, as Independent Claims 1, 6, and 13 (and any claims depending therefrom) have been shown to be patentably distinct from any of the teachings of *Cadeddu*. Notwithstanding this issue, Applicant also notes that the Examiner has failed to satisfy each of the elements of non-obviousness, which are required to support a proper §103 analysis. According to M.P.E.P. §2143, to establish a prima facie case of obviousness, three criteria must be met. First, there must be some suggestion or motivation to

combine the references. Second, there must be a reasonable expectation of success. Third, the prior art combination of references must teach or suggest all of the claim limitations.¹ Applicant posits that the Examiner has failed to meet his burden with respect to all of the criteria of non-obviousness.

With respect to the first criterion of non-obviousness, the Examiner has not shown a suggestion or a motivation in the references or in the knowledge generally available to one of ordinary skill in the art to combine the cited references. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of making the combination.² Thus, the fact that the teachings of one reference (*Cadeddu*) would improve the teachings of another reference (*Shiragaki* or *Karasan*), as proposed by the Examiner, does not provide the required suggestion to make such a combination. Nothing in *Cadeddu* or in any other cited reference suggests or motivates the proposed combinations. Nor has the Examiner provided any evidence that suggests any of the proposed modifications.³ The Examiner merely speculates that “it would have been obvious” to make the proposed combinations. The Examiner is interjecting a subjective conclusory statement in an improper hindsight attempt at rejecting the claims without citing any language from any of the cited references to support the rejection. The Examiner presents no objective evidence from the prior art that suggests or motivates the combination as is required by Federal Circuit caselaw.⁴ The M.P.E.P. also confirms that this approach is improper and, thus, it should not be used here.⁵

Furthermore, the Examiner is precluded from modifying the combined teachings of reference *Cadeddu*, *Shiragaki*, or *Karasan* in an effort to teach the limitations of the pending

¹ See generally M.P.E.P. §2143.

² See M.P.E.P. §2143.01.

³ If the Examiner is relying on “common knowledge” or “well known” art in support of his rationale for combining the references, the Examiner is requested to produce a reference in support of his position pursuant to M.P.E.P. §2144.03. If the Examiner is relying on personal knowledge to supply the required motivation or suggestion to combine, Applicant respectfully requests that the Examiner produce an affidavit supporting such facts pursuant to M.P.E.P. §2144.03.

⁴ In *In re Dembicza*k, the Federal Circuit reversed a finding of obviousness by the Board of Patent Appeals and Interferences, explaining that evidence of a suggestion, teaching, or motivation to combine is essential to avoid impermissible hindsight reconstruction of an applicant's invention. *In re Dembicza*k, 175 F.3d 994, 999 (Fed. Cir. 1999). Conclusory statements by the Examiner regarding the teaching of multiple references, standing alone, are not “evidence.” *Id*.

⁵ See M.P.E.P. §2145. (“The Federal Circuit has produced a number of decisions overturning obviousness rejections due to lack of suggestion in the prior art of the desirability of combining references.”), See also *In re Jones*, 958 F.2d 347 (“Conspicuously missing from this record is any evidence, other than the PTO's speculation (if that can be called evidence) that one of ordinary skill in the herbicidal art would have been motivated to make the modification of the prior art salts necessary to arrive at [the claimed invention].”)

claims because there is no indication in any of the references as to the desirability of making such modifications. The cited references must disclose the desirability of making the proposed modification.⁶ The fact that the modification is possible or even advantageous is not enough.⁷ A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.⁸

With respect to the second criterion of non-obviousness, the Examiner has also failed to show a reasonable expectation of success for the proposed combinations. The combinations of *Cadeddu* and any of the references of record would not be capable of performing the operation provided by the claimed invention. For example, there is no showing by the Examiner that the teachings of *Cadeddu* and any of the other references would be able to provide one pair of nodes being configured to exchange optical signals using the first wavelength on the second optical carrier and the second wavelength on the first optical carrier during a failure condition. The proposed combination (presumptively) attempts to combine divergent subject matter that has not been shown to be capable of operating according to any degree of predictability. The Examiner, without resorting to improper hindsight to look through the claimed invention, has not addressed the chance that the proposed combinations would have any success whatsoever: let alone a reasonable expectation of success as is required. Therefore, Applicant respectfully submits that the Examiner has failed to establish the second criterion for a *prima facie* case of obviousness.

With respect to the third criterion of non-obviousness, the Examiner has not shown how the proposed combination teaches each and every limitation of the claimed invention. For example, Independent Claims 1 and 6 recite, in general, one pair of nodes being configured to exchange optical signals using the first wavelength on the second optical carrier and the second wavelength on the first optical carrier during a failure condition. In contrast to these teachings, no reference (alone or in combination) offers any disclosure that is relevant to such subject matter and, thus, to the patentability of Independent Claims 1, 6, and 13. Moreover, the deficiencies of *Cadeddu* are reflected in the other references of record in that none of them teach the above-identified limitation, as would be required to support a proper §103 rejection. For at least this reason, Independent Claims 1, 6, and 13 are allowable over the cited art. Therefore, Applicant respectfully submits that all of the pending claims have been shown to be allowable, as

⁶ See, e.g., *In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990).

⁷ See, e.g., *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984).

⁸ *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). (See also M.P.E.P. §2141.02).

they are patentable over the references of record. Claims 2-5, 7-12, and Claims 14-21 depend from Claims 1, 6, and 13 respectively and, thus, are also allowable for similar reasons. Notice to this effect is respectfully requested in the form of a full allowance of claims 1-21.

Double Patenting and Provisional Rejections

The Examiner provisionally rejects claims 1-21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 14-15, 18-22, 25-27, and 29-33 of copending Application No. 09/750,311. Applicant stands prepared to submit a terminal disclaimer in order to overcome the Examiner's nonstatutory double patenting rejection provided the pending claims are deemed allowable in their present form. Applicant respectfully requests that the rejection be suspended until all other patentability issues are resolved. Filing of the terminal disclaimer, however, should not be construed as agreement with or acquiescence to the Examiner's statements that the claims of the present application are in any way related to other identified subject matter. Applicant reserves the right to comment on these statements at a later date if Applicants deem it appropriate to do so. However, the copending application is distinguishable from the pending claims. Moreover, the claimed subject matter of these two cases is discrete and separable. Additionally, the amendments made to the pending claims only further clarify such differences. Accordingly, Applicant respectfully requests the Examiner to withdraw this rejection.

CONCLUSION

Applicants has now made an earnest attempt to place this case in condition for immediate allowance. For the foregoing reasons and for other reasons clear and apparent, Applicant respectfully requests reconsideration and allowance of Claims 1-21.

The required fee of \$180.00 is submitted herewith for the IDS and is believed to be correct. However, if this is not correct the Commissioner is hereby authorized to charge additional fees or credit any overpayments to Deposit Account No. 02-0384 of Baker & Botts, L.L.P.

If there are matters that can be discussed by telephone to advance prosecution of this application, Applicants invite the Examiner to contact its attorney at the number provided below.

Respectfully submitted,
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